Einführung in Red Hat OpenShift

specifically for OpenShift beginners

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About me

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Red Hat

Agenda

OpenShift & Open source

Container Basics

Ecosystem

Cloud Native Demo

Before we can understand OpenShift, we need to understand Red Hat and open source

OpenShift & Open source

Open source is about more than developing software.

It's how we built our company.

And it's why we have been so successful.

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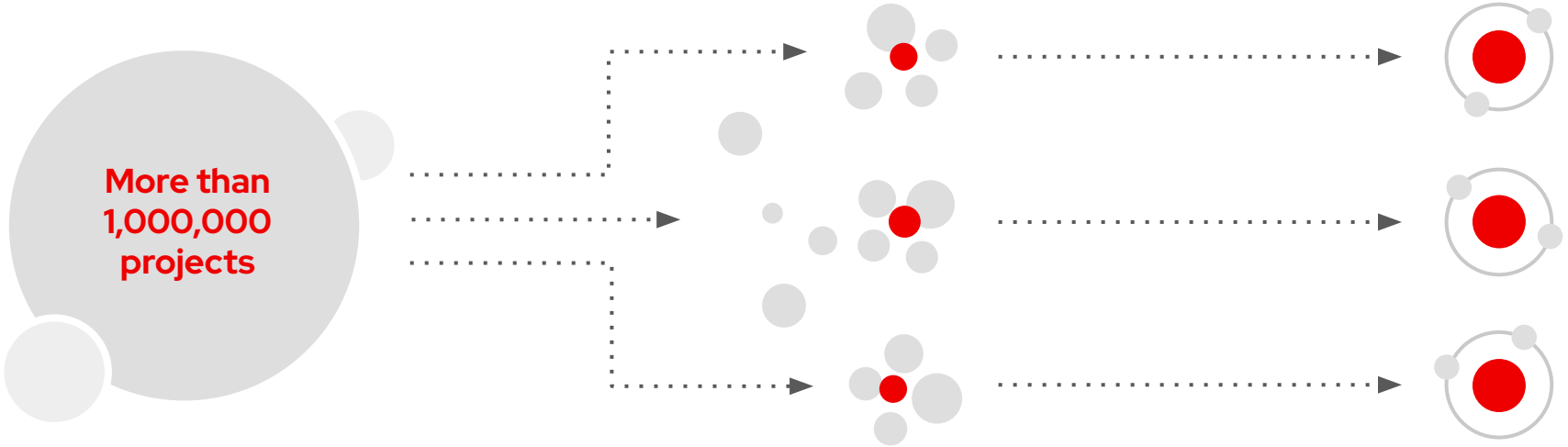
Product development model



Participate

We participate in and create community-powered upstream projects.

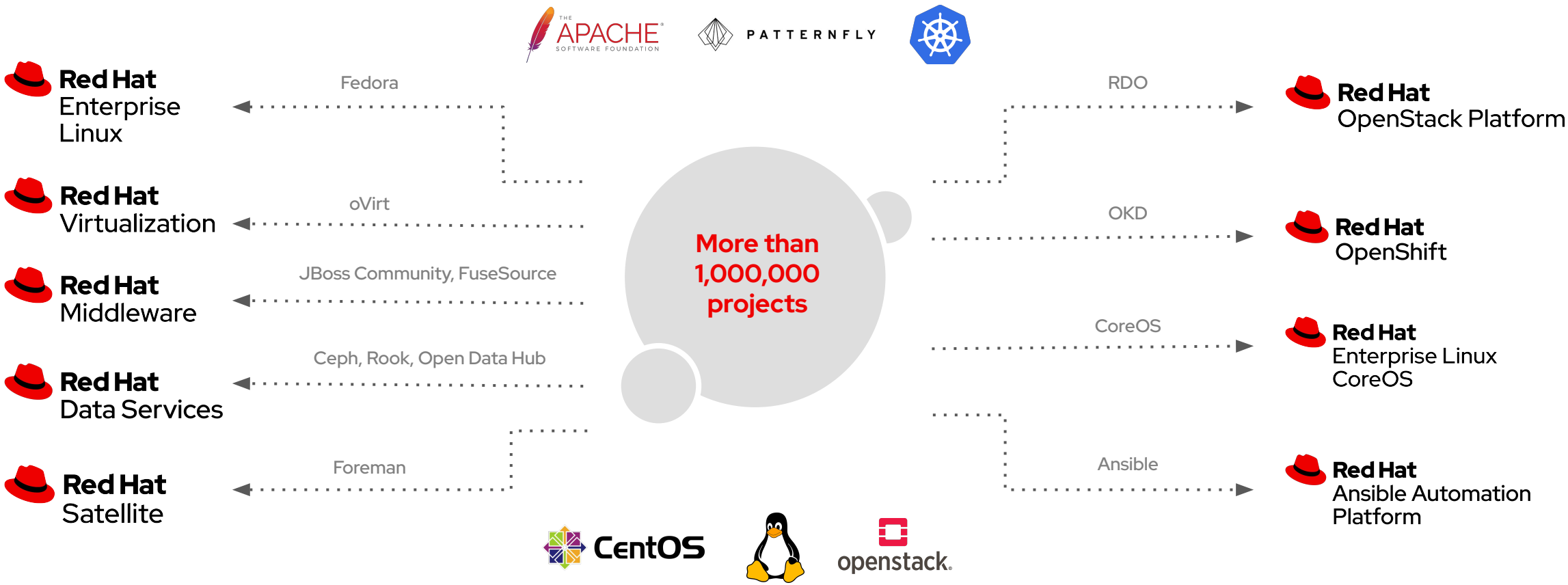
Integrate

We integrate upstream projects, fostering open community platforms.

Stabilize

We commercialize these platforms together with a rich ecosystem of services and certifications.

From communities to enterprise



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OpenShift is the platform built for cloud native application development and deployment across the hybrid cloud

"[Red Hat] OpenShift is the most widely deployed multicloud container platform and boasts powerful development and unified operations experiences across many public and on-premises platforms. Red Hat pioneered the "operator" model for infrastructure and application management and provides a rich partner ecosystem and popular marketplace."

The Forrester Wave™: Multicloud Container Development Platforms, Q3 2020: The Eight Providers That Matter Most and How They Stack Up
Sep 2020

Source: Forrester, The Forrester Wave™: Multicloud Container Development Platforms, Q32020: The Eight Providers That Matter Most and How They Stack Up. Sep 2020.

Red Hat OpenShift

Red Hat OpenShift is for every innovator

Ready for IT operators

- Automate processes. Reduce complexity.
- Operate more securely from end to end.

Empowering developers

- Code fast with familiar tools.
- Rapidly deliver without roadblocks.

Proven for business leaders

- Choose a platform to power business today.
- Create a cloud strategy for the future.

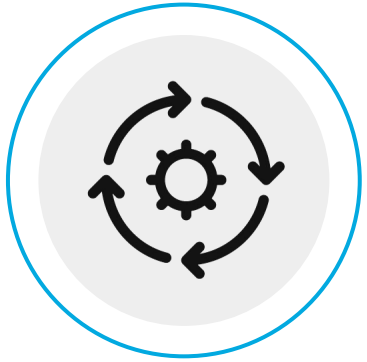
Red Hat customers have common needs & challenges

Hybrid cloud infrastructure

Build the foundation for the future, while managing costs to speed progress

Cloud-native development

Accelerate application development, innovation, & delivery



IT automation & management

Automate infrastructure & applications so you can do more without sacrificing stability

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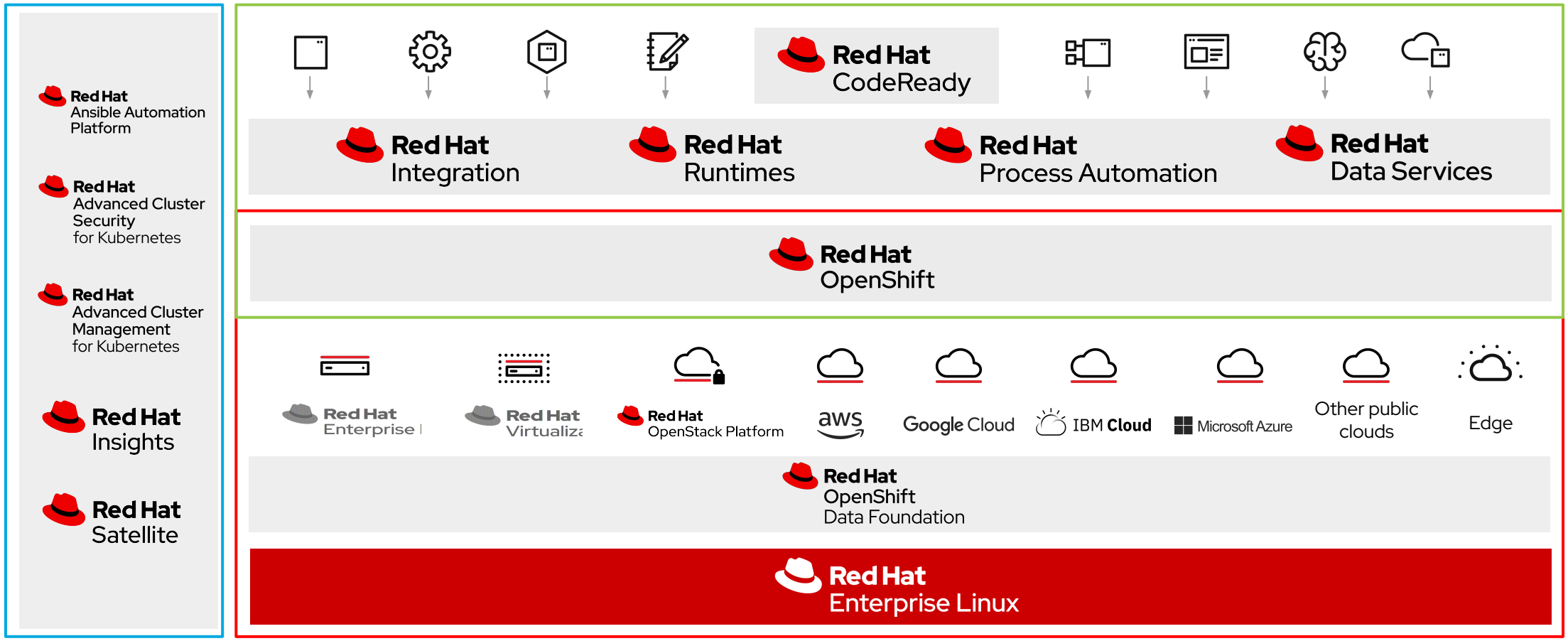
Addressing these challenges with a broad portfolio



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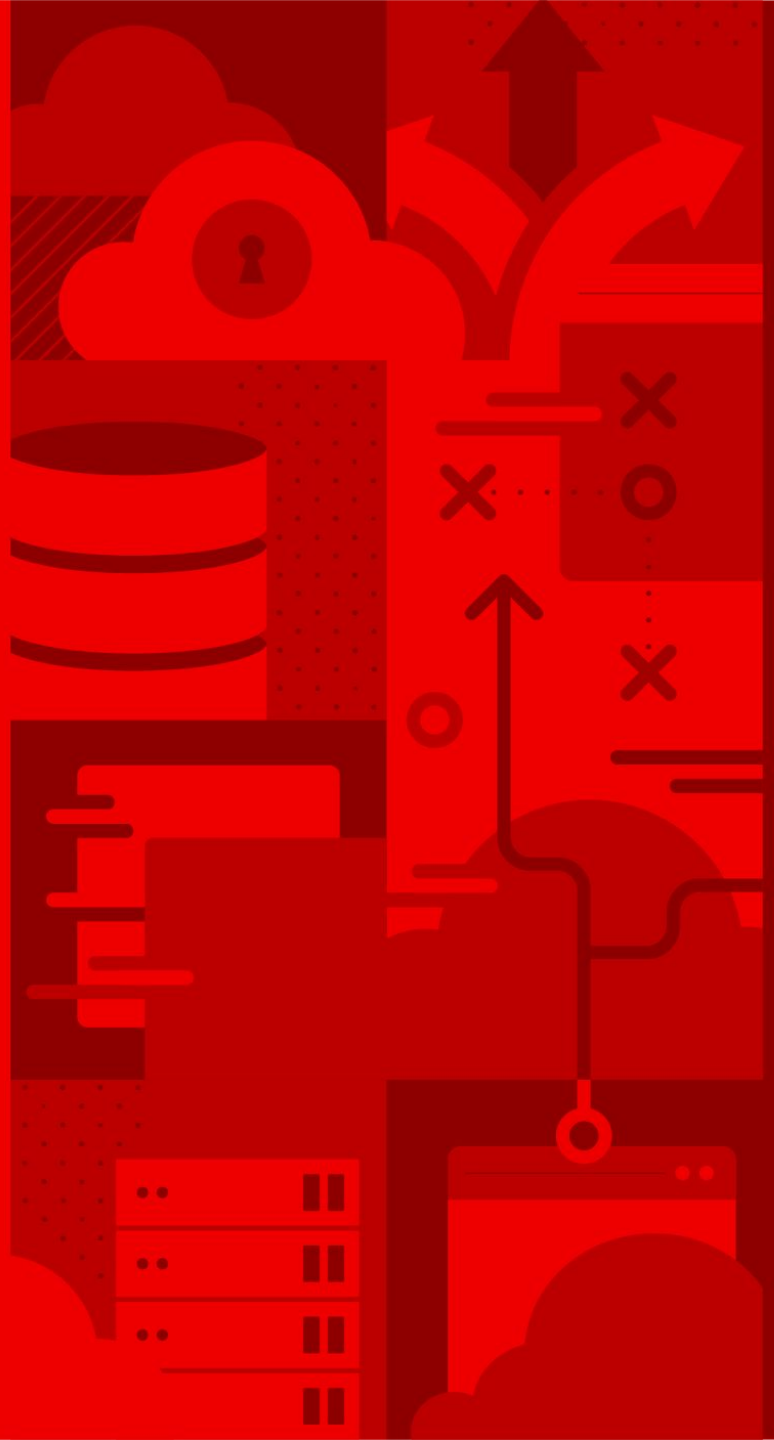

Container Basics

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Container-Basics

- a container is the smallest compute unit

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Container-Basics - Registry

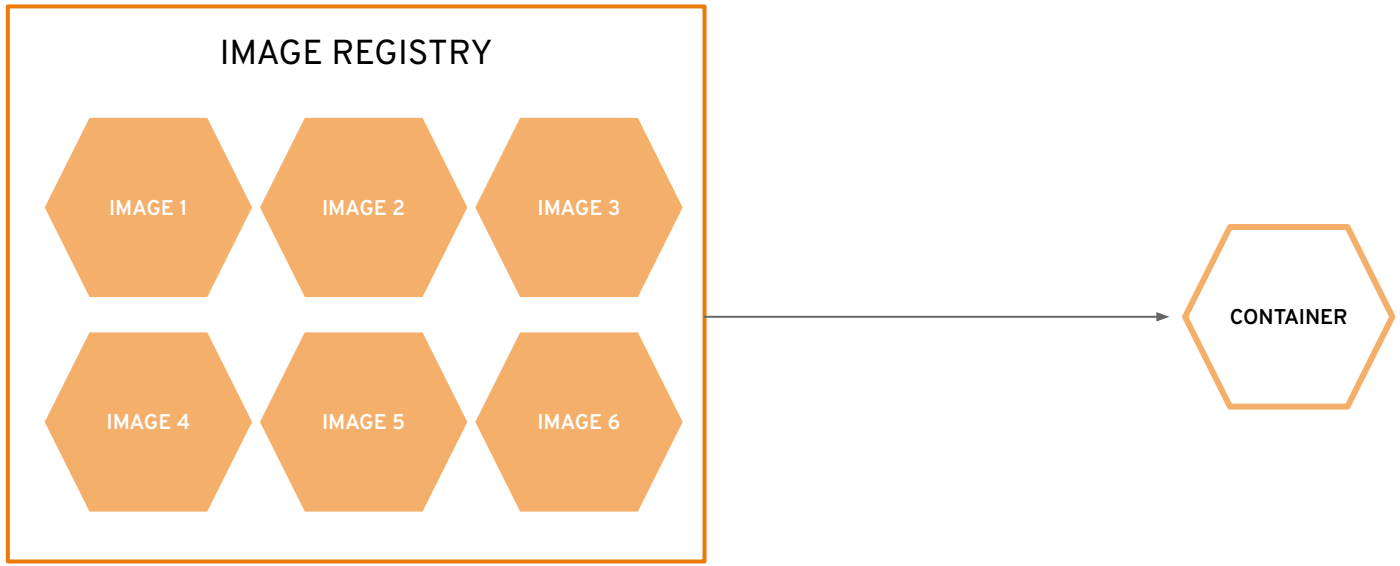
containers are created from container images

BINARY

RUNTIME (running process)

Container-Basics - Registry

container images are stored in an image registry



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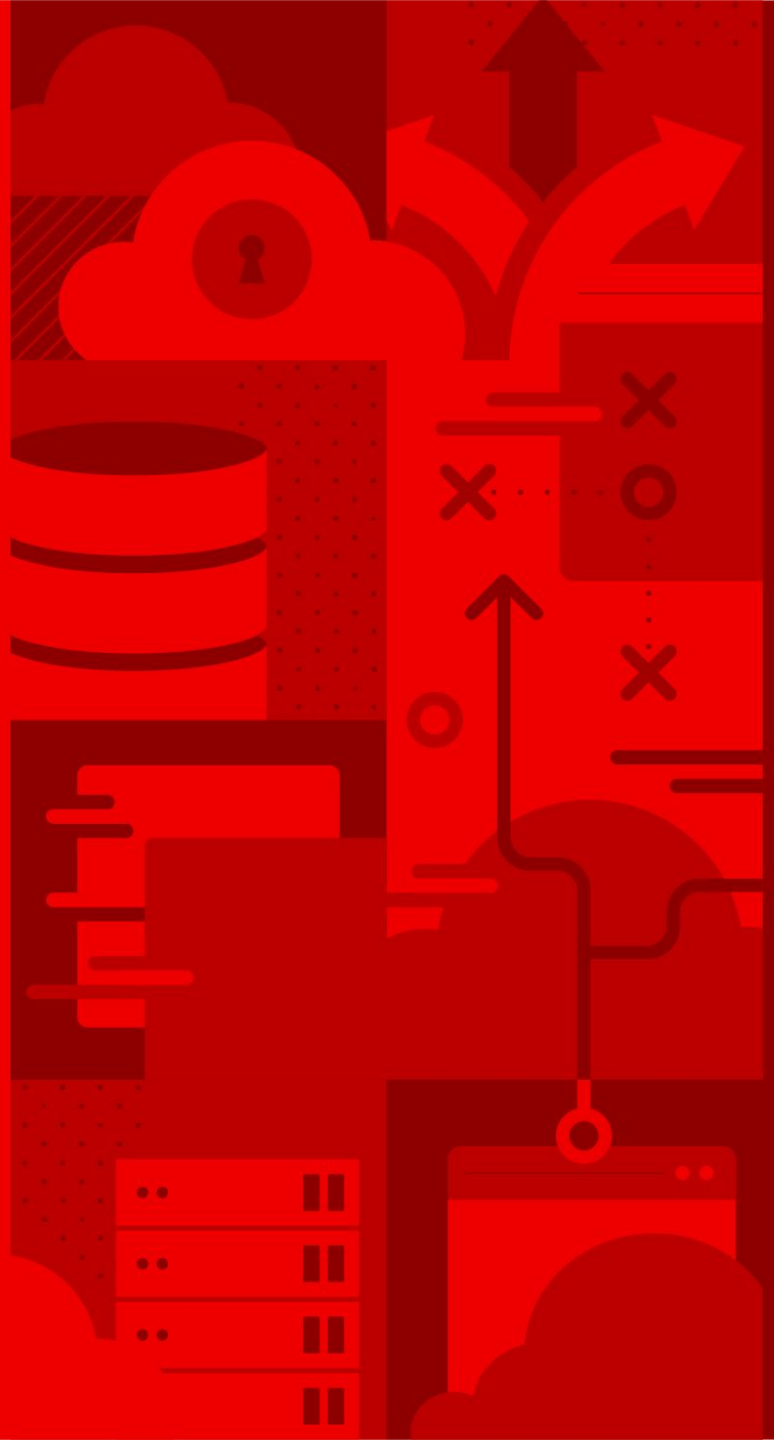
Container-Basics - POD's

- containers are wrapped in pods which are units of deployment and management



K8S handles all these Containers

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Kubernetes and what it can do for you

Service discovery and load balancing - Kubernetes can expose a container using the DNS name or using their own IP address. If traffic to a container is high, Kubernetes is able to load balance and distribute the network traffic so that the deployment is stable.

Automatic bin packing - You provide Kubernetes with a cluster of nodes that it can use to run containerized tasks. You tell Kubernetes how much CPU and memory (RAM) each container needs. Kubernetes can fit containers onto your nodes to make the best use of your resources.

Self-healing - Kubernetes restarts containers that fail, replaces containers, kills containers that don't respond to your user-defined health check, and doesn't advertise them to clients until they are ready to serve.

Kubernetes and what it can do for you

Storage orchestration – Kubernetes allows you to automatically mount a storage system of your choice, such as local storages, public cloud providers, and more.

Secret and configuration management – Kubernetes lets you store and manage sensitive information, such as passwords, OAuth tokens, and SSH keys. You can deploy and update secrets and application configuration without rebuilding your container images, and without exposing secrets in your stack configuration.

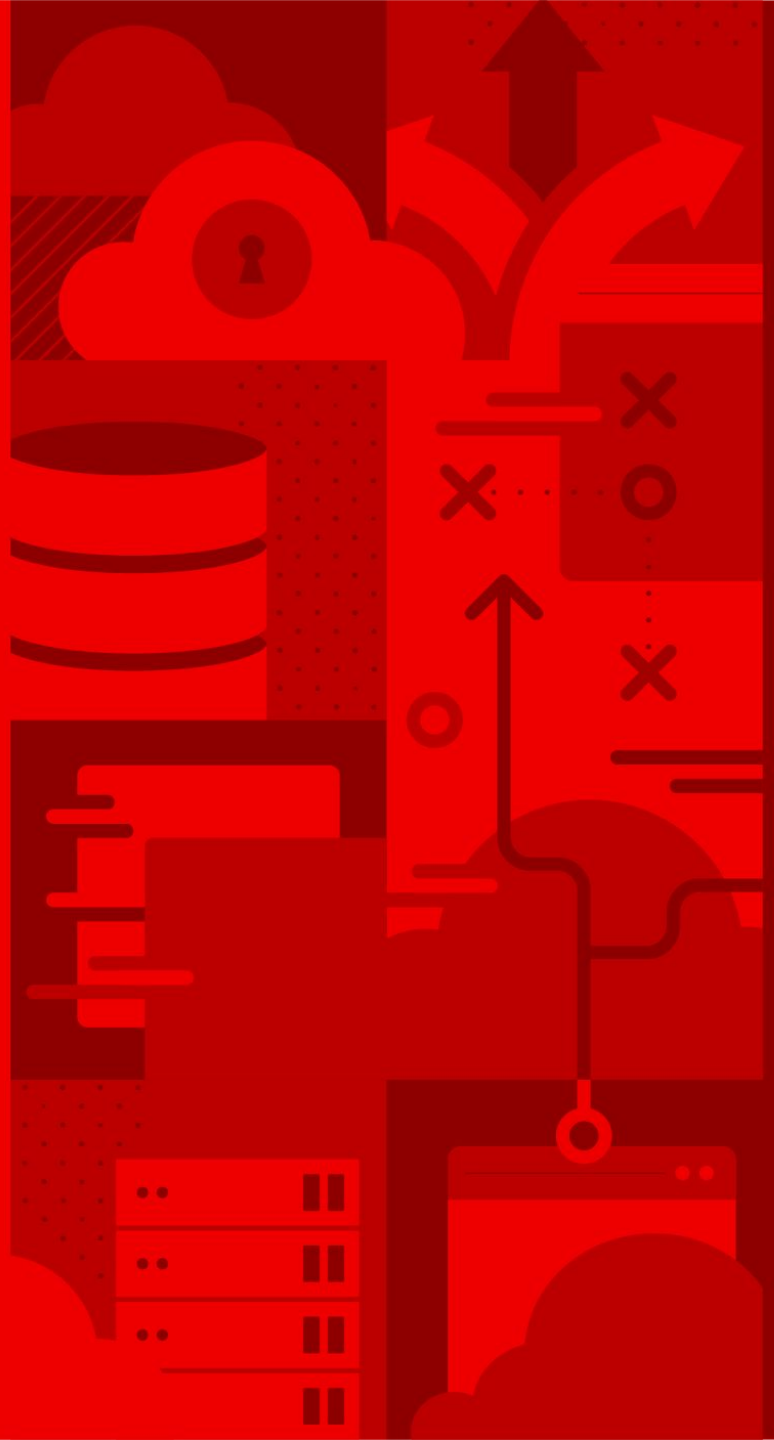
Automated rollouts and rollbacks – You can describe the desired state for your deployed containers using Kubernetes, and it can change the actual state to the desired state at a controlled rate. For example, you can automate Kubernetes to create new containers for your deployment, remove existing containers and adopt all their resources to the new container.

Kubernetes and what it can't do for you

Does not deploy source code and does not build your application. Continuous Integration, Delivery, and Deployment (CI/CD) workflows are determined by organization cultures and preferences as well as technical requirements.

Does not provide application-level services, such as middleware (for example, message buses), data-processing frameworks (for example, Spark), databases (for example, PostgreSQL), caches, nor cluster storage systems (for example, Ceph) as built-in services.

Does not dictate logging, monitoring, or alerting solutions. It provides some integrations as proof of concept, and mechanisms to collect and export metrics.



Ecosystem

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Your choice of OpenShift

Self-managed Red Hat OpenShift editions

Red Hat OpenShift Kubernetes Engine

Essential enterprise Kubernetes Infrastructure

Includes:

- Enterprise Kubernetes runtime
- Red Hat Enterprise Linux CoreOS immutable container OS
- Administrator console
- OpenShift Virtualization

Red Hat OpenShift Container Platform

Opinionated application development platform

Adds:

- Developer console
- Log management and metering/cost management
- Red Hat OpenShift Serverless (Knative)
- Red Hat OpenShift Service Mesh (Istio)
- Red Hat OpenShift Pipelines & Red Hat OpenShift Gitops (Tekton, ArgoCD)

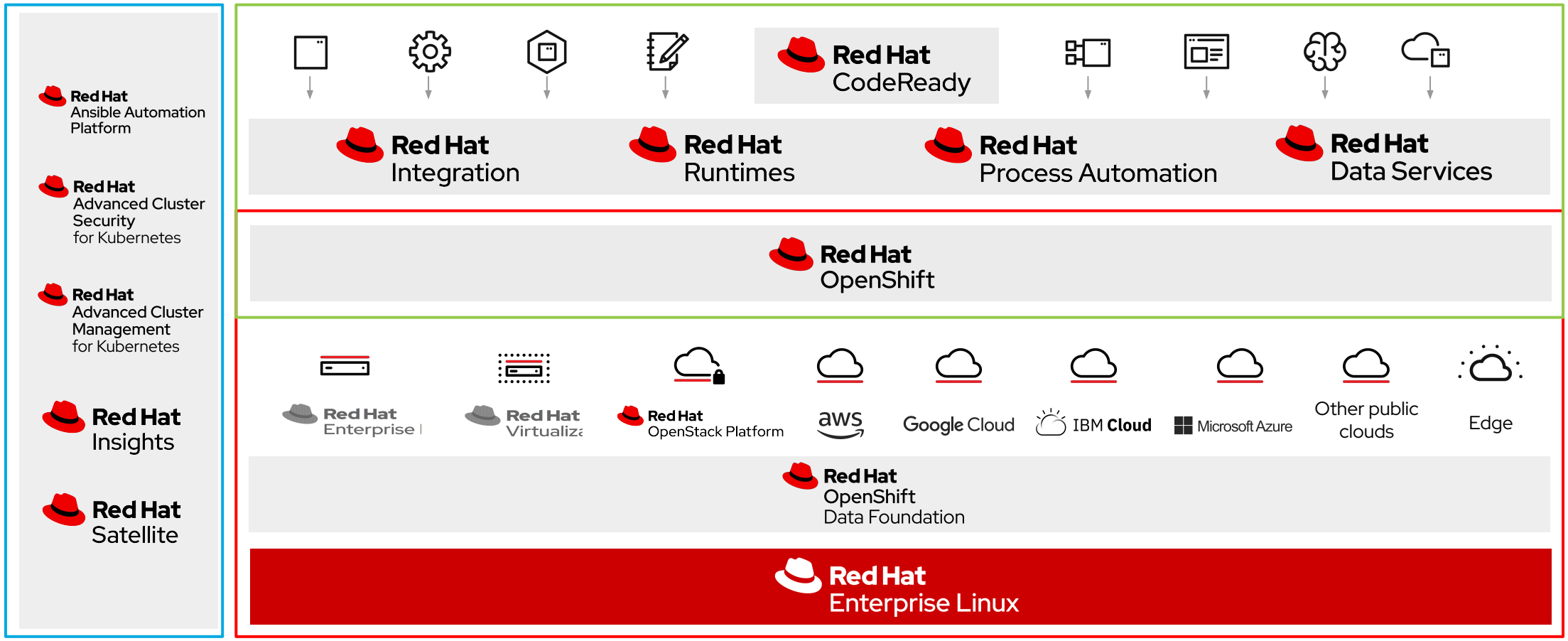
Red Hat OpenShift Platform Plus

Manageability and consistency across hybrid and multi cloud with advanced security for DevSecOps

Adds:

- Red Hat Advanced Cluster Management for Kubernetes
- Red Hat Advanced Cluster Security for Kubernetes
- Red Hat Quay

Addressing these challenges with a broad portfolio



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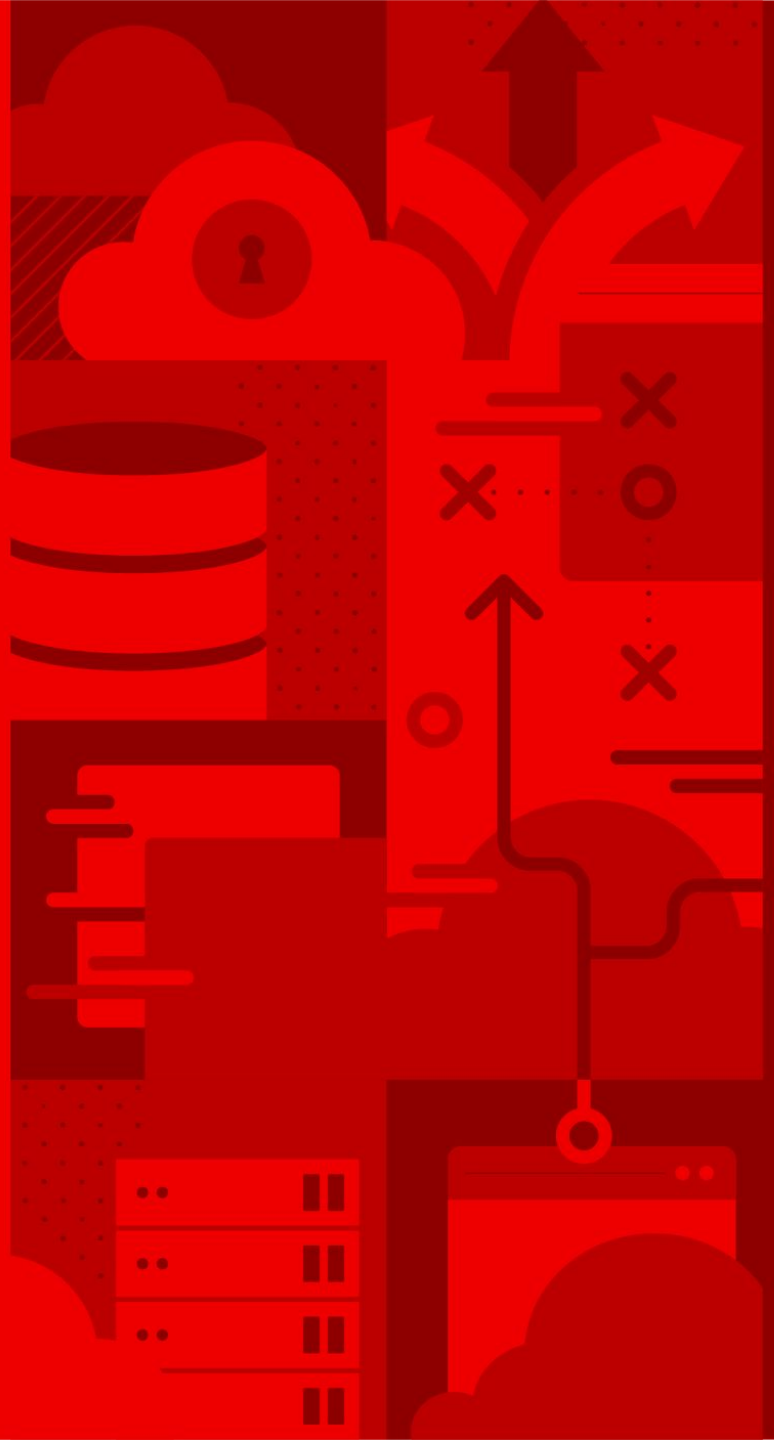

Cloud Native Demo

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Cloud Native Demo

Use Case

Application is up and running on OpenShift

OCP 4

Application is a cloud native app

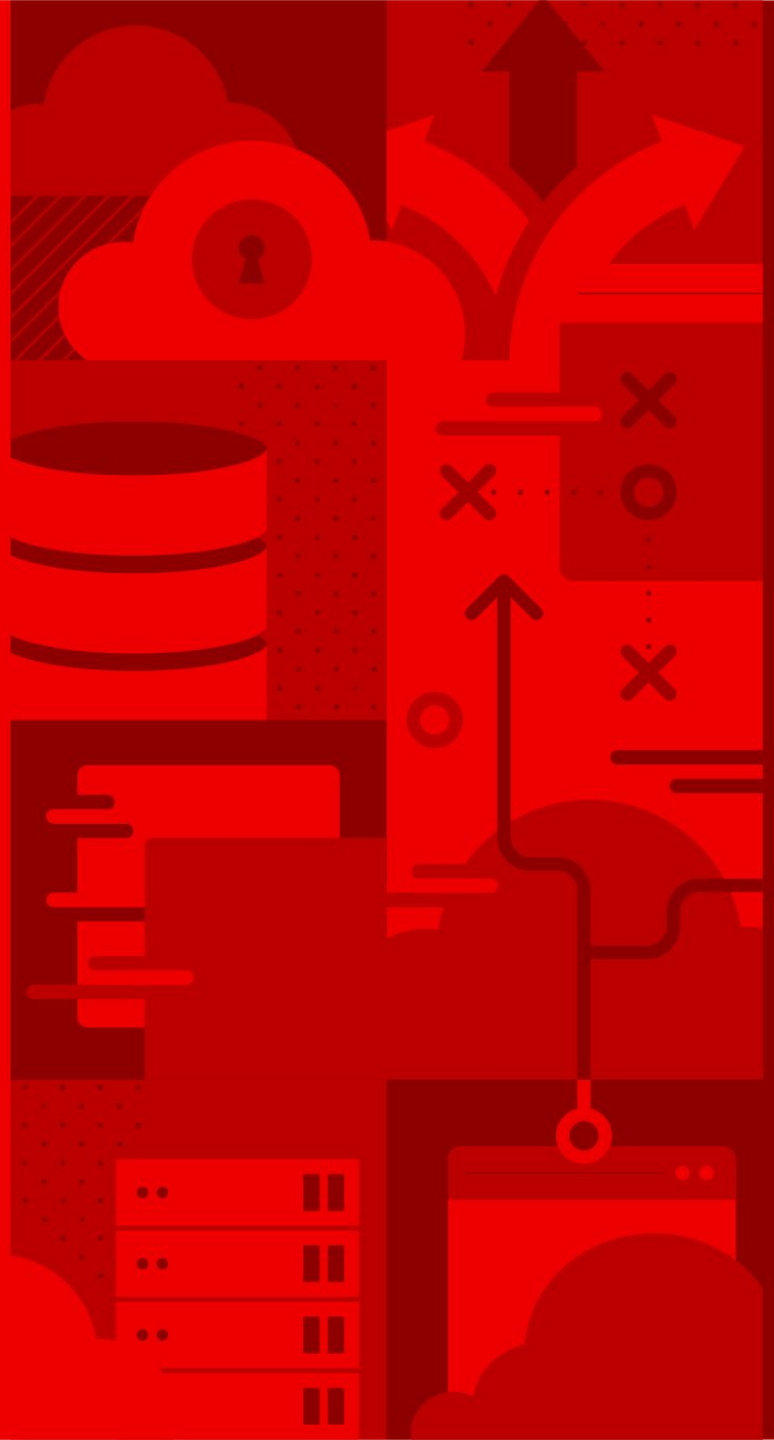
Quarkus

Application CI/CD is cloud native

OpenShift Pipelines

Application produces and consumes data

AMQ Streams



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Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.

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